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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* ALBERT BRUYNESTEYN

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Appeal 2009-0199
Application 10/723,392
Technology Center 1700

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Decided:[1] March 03, 2009

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Before BRADLEY R. GARRIS, LINDA M. GAUDETTE, and MARK NAGUMO, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

decision rejecting claims 1-5, 7, and 9-14. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

*Statement of the Case*

Appellant claims a method of leaching low sulfur content ores to release metal values comprising preconditioning finely ground elemental sulfur particles with bacteria to produce acidic bioleach solutions and agglomerating the sulfur particles, after they have been preconditioned with bacteria, throughout a leaching heap with the low sulfur content ores to release metal values.

Representative claims 1, 2, 12, and 13 read as follows:

1. A method of leaching low sulphur content ores to release metal values, comprising:

preconditioning finely ground elemental sulphur particles with bacteria, in a biological reactor for a sufficient time that the sulphur becomes wetted and the bacteria attach themselves to the sulphur surfaces, producing acidic bioleach solutions; and

agglomerating the sulphur particles after they have been preconditioned with bacteria throughout a leaching heap with the low sulphur content ores to release metal values.

2. The method of claim 1 wherein *Thiobacillus ferrooxidans* is added to the leaching heap when the pH of acidic bioleach solution at the bottom of the heap falls below about 2.4.

12. The method of claim 1 in which the sulphur particles are preconditioned with bacteria in a biological reactor for at least 12 hours.

13. The method of Claim 1 in which the acidic bioleach solutions produced in the reactor are added to the leaching heap.

The Examiner rejects claims 2 and 12-14 under the first paragraph of 35 U.S.C. § 112 for failing to comply with the written description requirement of this paragraph (Ans. 3).

The Examiner also rejects claims 1-5, 7, and 9-14 (i.e., all appealed claims) under 35 U.S.C. § 103(a) as being unpatentable over Duyvesteyn (US 6,387,239 B1) in view of Winby (US H2005 H) (Ans. 3-4).

## The § 112 Rejection

### *Issue*

Has Appellant established error in the Examiner's determination that claims 2 and 12-14 fail to comply with the written description requirement of § 112, first paragraph?

### *Findings of Fact*

In response to the Examiner's § 112, first paragraph, rejection:

Appellant identifies the disclosed pH range of "2.4-1.8" at Specification, page 6, lines 12-16, as providing descriptive support for the claim 2 pH range "below about 2.4" because "[c]learly 'below 2.4' is within the range of 1.8 to 2.4 and therefore does not represent new matter" (Br. 4).

Appellant identifies the "12-48 hours" disclosure at Specification 6, lines 4-9, as providing descriptive support for the claim 12 and claim 14 limitation "at least 12 hours" because "[c]learly, 'at least 12 hours' falls into the range of 12-48 and therefore does not represent new matter" (Br. 4, 5).

Finally, Appellant states that the claim 13 limitation "the acidic bioleach solutions produced in the reactor are added to the leaching step" is supported by the Specification disclosure at page 3, lines 4-10, which reads as follows:

> This preconditioning step causes the highly hydrophobic elemental sulphur to become fully wetted allowing the bacteria present to attach themselves to the surface of the sulphur particles. At the same time, a quantity of sulphuric acid, normally 20-40 g/L, is produced in the reaction, which can be used to partially satisfy the acid demand of the ore by adding the acid during agglomeration of the ore as well as by adding some of the acid to the leach solution reservoir. [Br. 5]

*Principles of Law*

The test for written description compliance is whether the disclosure of the application as filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563 (Fed. Cir. 1991).

*Analysis*

As reflected from the findings above, Appellant relies on the limited ranges disclosed in the Specification to support the broader ranges defined by claims 2, 12, and 14. The Examiner correctly points out, however, that the broad ranges of the aforementioned claims encompass values far outside the more narrow ranges of the Specification disclosure (Ans. 5). The Examiner gives as examples the fact that the claim 2 range includes a pH of 1.1, which is outside the Specification range of 1.8-2.4, and the fact that the range of claims 12 and 14 includes 160 hours which is outside the Specification range of 12-48 hours (*id.*).

Significantly, Appellant has not explained why the narrow ranges of the Specification are considered to reasonably convey to the artisan that Appellant had possession on the application filing date of pH values and time periods which are encompassed by the broader ranges of claims 2, 12, and 14, but which are outside the Specification ranges.

On the other hand, we agree with Appellant that the dependent claim 13 limitation, "the acidic bioleach solutions produced in the reactor are added to the leaching heap", is descriptively supported by the Specification including the disclosure at lines 4-10 on page 3. This page 3 disclosure would reasonably convey to the artisan that the preconditioning step (i.e., as recited in this disclosure and in parent claim 1) produces sulfuric acid (i.e., the acidic bioleach solution) which is added to the leaching heap during agglomeration of the ore. Therefore, this disclosure would reasonably convey to the artisan that Appellant had possession of the subject matter defined by claim 13 on the application filing date.

*Conclusion of Law*

Appellant has not shown error in the Examiner's determination that claims 2, 12, and 14 fail to comply with the written description requirement in the first paragraph of 35 U.S.C. § 112.

As a consequence, we sustain the Examiner's § 112, first paragraph, rejection of these claims.

However, because Appellant has shown Examiner error with respect to claim 13, we do not sustain the § 112, first paragraph, rejection of this claim.

The § 103 Rejection

*Issue*

Has Appellant shown error in the Examiner's determination that Duyvesteyn teaches, or at least would have suggested, preconditioning sulfur particles such that they become wetted and attached to bacteria thereby producing acidic bioleach solutions before addition to a leaching heap as required by claim 1?

*Findings of Fact*

Duyvesteyn teaches a bio-leaching method for recovering metal from ore wherein a sulfur containing compound is mixed with a microorganism before, during, or after contact with the ore to systemically form sulfuric acid to leach the metal from the ore (Abstract).

Duyvesteyn explicitly teaches that "a sulfur-containing compound is mixed with the sulfur selective microorganism before applying the solution to the heap" (col. 3, ll. 7-9).

Duyvesteyn repeatedly discloses that mixing the sulfur-containing compound and microorganism generates a sulfuric acid solution which is used to leach metal from the ore (col. 2, ll. 57-65; col. 3, ll. 12-20; para. bridging col. 3-4; col. 7, ll. 9-23).

Finally, Example 1 of Duyvesteyn refers to "10 milliliter of inoculum that had been grown on elemental sulfur" (col. 8, ll. 61-62) which teaches, or at least would have suggested, that the microorganism becomes attached to sulfur surfaces during the mixing step when the desired sulfuric acid solution is produced.

*Principles of Law*

A § 103 analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ. *KSR International Co. v. Teleflex Inc.,* 127 S.Ct. 1727, 1741 (2007).

The teaching or suggestion of claimed subject matter may come explicitly from statements in the prior art or may be implicit from the prior art. *In re Kotzab*, 217 F.3d 1365, 1370 (Fed. Cir. 2000).

In considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference, but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825, 826-27 (CCPA 1968).

*Analysis*

With regard to claim 1, Appellant argues that "Duyvesteyn does not disclose or suggest that the sulphur particles become wetted and the bacteria attach themselves to the sulphur surfaces before addition to the leaching heap" (Br. 6). We do not agree.

As established by the findings above, Duyvesteyn repeatedly discloses that sulfur and microorganism (i.e., bacteria) are mixed to generate a sulfuric acid solution which is used to leach metal from an ore heap. Further, Duyvesteyn teaches, or at least would have suggested, that during this mixing step, when sulfuric acid solution is generated, the sulfur particles are wetted and the bacteria are attached to the sulfur surfaces. Finally, Duyvesteyn teaches practicing the mixing and acid solution generating steps before the step of adding to the leaching heap via the previously quoted

disclosure "a sulfur-containing compound is mixed with the sulfur selective microorganism before applying the solution [i.e., the sulfuric acid solution] to the heap" (col. 3, ll. 7-9) (emphasis added).

The express disclosure of Duyvesteyn and the inferences one skilled in the art would reasonably draw therefrom support the Examiner's determination that Duyvesteyn teaches, or at least would have suggested, the preconditioning step required by independent claims 1 and 14.

Concerning the dependent claims, Appellant merely states without embellishment that the limitations recited therein are not disclosed by the cited references (Br. 7-8). However, such unembellished statements are inadequate to identify with any reasonable specificity harmful error in the Examiner's unpatentability determination.

*Conclusions of Law*

Appellant has not shown error in the Examiner's determination that Duyvesteyn teaches, or at least would have suggested, preconditioning sulfur particles such that they become wetted and attached to bacteria, thereby producing acidic bioleach solutions before addition to a leaching heap as required by claim 1.

Appellant has not identified any reversible error in the Examiner's unpatentability determination for the dependent claims on appeal.

Under these circumstances, we sustain the Examiner's § 103 rejection of all appealed claims as being unpatentable over Duyvesteyn in view of Winby.

Summary

We have sustained the Examiner's § 112, first paragraph, rejection of claims 2, 12, and 14 as well as the Examiner's § 103 rejection of all appealed claims over Duyvesteyn in view of Winby.

We have not sustained the § 112, first paragraph, rejection of claim 13.

*Order*

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. §1.136(a)(1)(iv).

AFFIRMED

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